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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,242

02/27/2007

Remi Pierre Tsiava

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AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

PRICE, CARL D

ART UNIT

PAPER NUMBER

3749

MAIL DATE

DELIVERY MODE

01/06/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,242	Applicant(s) TSIAVA ET AL.	
	Examiner Carl D. Price	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/22/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims **12-21** have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the prior art relied on in the previous office action fail(s) to show, disclose and/or teach certain aspects of applicant's invention recited in the claims filed on **09/22/2009**.

In response to the prior art of record cited in the previous examiner's action and in support of the scope of the invention now presented in the amended claims, applicant argues the following:

With regard to claims 12-21 being provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-49 of U.S. Patent No.: 6,910,879 (Dugue, et al.) in view of U.S. Patent No. 6,422,041 (Simpson, et al.) applicant states the following:

“In the instant rejection, the Examiner has improperly used the disclosure of the base reference Dugue, et al. as prior art. The Examiner has failed to compare the scope of the base reference claims to that of the claims of the present application.”

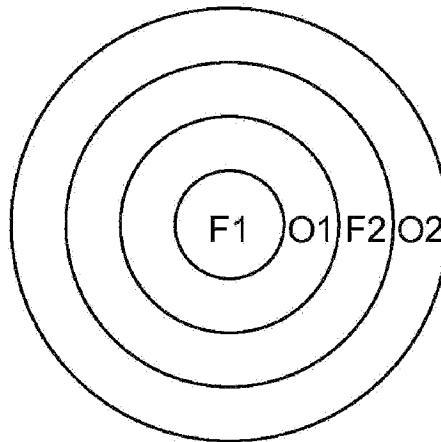
“Rather, the Examiner compares the scope of the disclosure of the base reference to that of the claims of the present application.”

The examiner disagrees with applicant's assertion that the examiner has improperly used the disclosure of the base reference Dugue, et al. as prior art, rather than compare the scope of the base reference claims to that of the claims of the present application. On the contrary, the examiner has provided nothing less than a clear explanation of the grounds of rejection. Indeed, there is no showing in the examiner's explanation of the rejection that would suggest any reliance on the disclosure of the base reference Dugue, et al. as prior art, as suggested by the applicant. However, in order to more fully illustrate the similarities between the scope of the claimed invention and that which is set forth in the claims of Dugue, et al., the examiner has provided a table which compares the text of the respective claims. See the examiner's action here below.

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With respect to claim 12 being rejected under 35 U.S.C. 102(b) as being anticipated by **US 6422041 (Simpson et al)** applicant provides the following discussion and figure:

"...Simpson, et al. discloses a completely different arrangement. With reference to the diagram below, Simpson, et al. discloses a first portion of fuel (F1) being injected as a centrally located jet, a first portion of oxygen (O1) being injected annularly and coaxially around the central fuel jet, a second portion of fuel (F2) being injected annularly and coaxially around the first portion of oxygen, and a second portion of oxygen (O2) being injected annularly and coaxially around the second portion of fuel."



With respect to claim 12 being rejected under 35 U.S.C. 102(b) as being anticipated by **US 6422041 (Simpson et al)**, the examiner does not agree with applicant's suggestion that the arrangement shown in Simpson, et al., does not meet the limitations of the claimed invention, at least in the manner only broadly claimed. In this regard it is noted that applicant's claim requires and recites only that "a first primary jet of oxidizer,..., injected in the center of the jet of fuel". This limitation does not preclude the arrangement wherein the oxidizer (labeled "O2" in applicant's illustration herein above) is indeed central to and coaxial with a fuel stream (labeled "F2" in applicant's illustration herein above), albeit an additional fuel stream is located at a central portion of the oxidizer (labeled "O2" in applicant's illustration herein above).

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In response to applicant's argument(s) directed to the prior art previously relied on, and in response to the scope of the invention now set forth in the presently amended claims, the following examiner's action now relies on the newly discovered prior art reference of **US 6699029 (Kobayashi et al)** Most notably, with regard to the now claimed invention, **US 6699029 (Kobayashi et al)** shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

Accordingly, while applicant's arguments have been carefully considered, applicant's claims do not patentably distinguish applicant's invention over the prior art of record.

See the examiner's action herein below.

Accordingly, while applicant's arguments have been carefully considered, applicant's claims do not patentably distinguish applicant's invention over the prior art of record.

See the examiner's action herein below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 12 recites the limitations "the center" in line 10. There is insufficient antecedent basis for these limitations in the claim.

Claim 13 recites the limitations "the injection velocity" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

Claim 14 recites the limitations "the injection velocity" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

Claim 15 recites the limitations "the injection velocity" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

Claim 16 recites the limitation "the injection velocity". There is insufficient antecedent basis for these limitations in the claim.

Claim 16 recites the limitations "the point" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

Claim 17 recites the limitations "the point" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

Claim 18 recites the limitation "the injection velocity". There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the distance". There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the same oxygen concentration". There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites the limitations "the oxygen concentration" (two occurrences). There is insufficient antecedent basis for these limitations in the claim.

All of the claims should be reviewed for further informalities.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

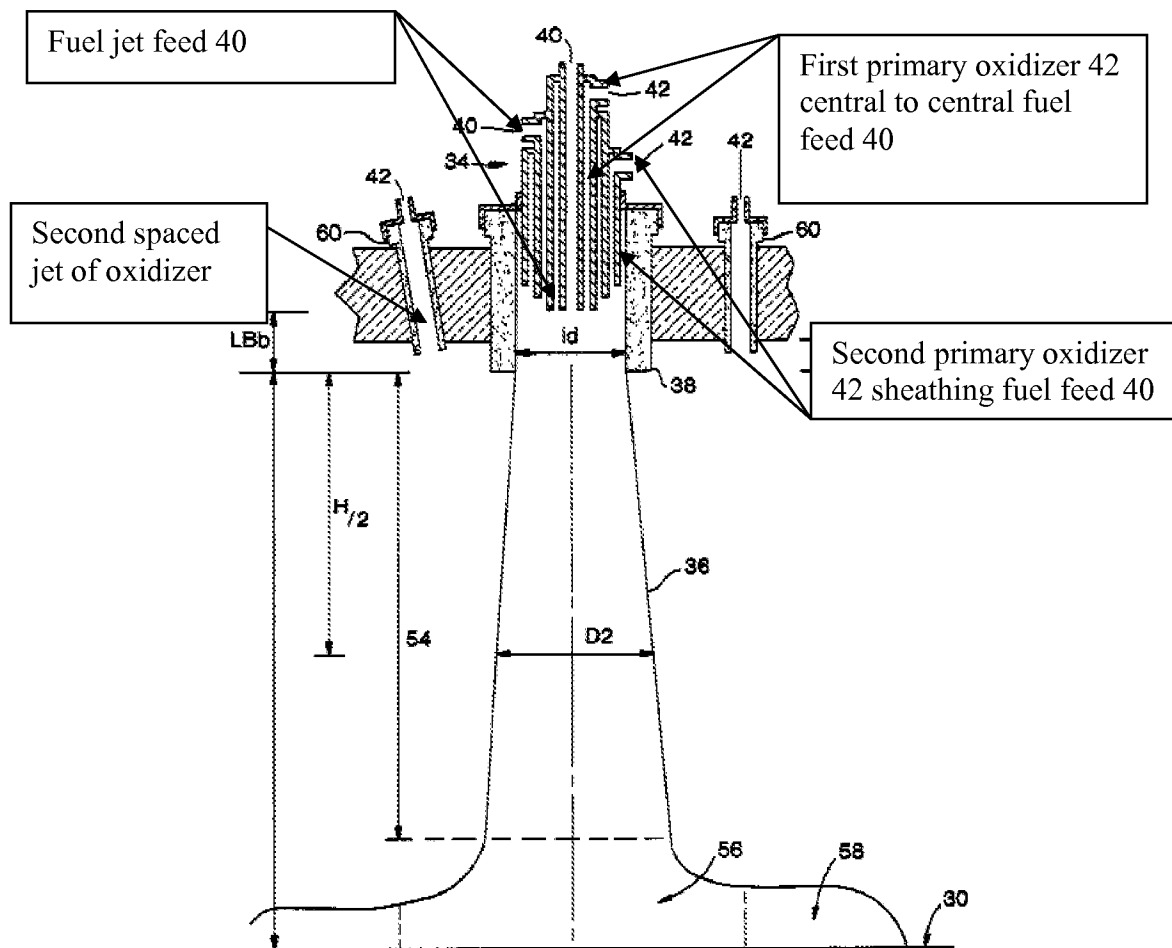
Claims Rejected under 35 USC § 102

Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by **US 6422041 (Simpson et al)**.

US 6422041 (Simpson et al) shows (figure 5) and discloses a method of combustion in a glass furnace including primary jet of oxidizer divided into a first primary central oxidizer jet (42) which is central to fuel jet (40), and a second primary sheathing primary jet (42). **US 6422041 (Simpson et al)** also shows and discloses a second jet of oxidizer (42, 60) located at a distance from the jet of fuel. See the annotated figure 5 of **US 6422041 (Simpson et al)** herein below)

US 6422041 (Simpson et al) shows:

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Claims Rejected under 35 USC § 102

Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by **US 6699029 (Kobayashi et al)**.

US 6699029 (Kobayashi et al) shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

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US 6699029 (Kobayashi et al) shows:

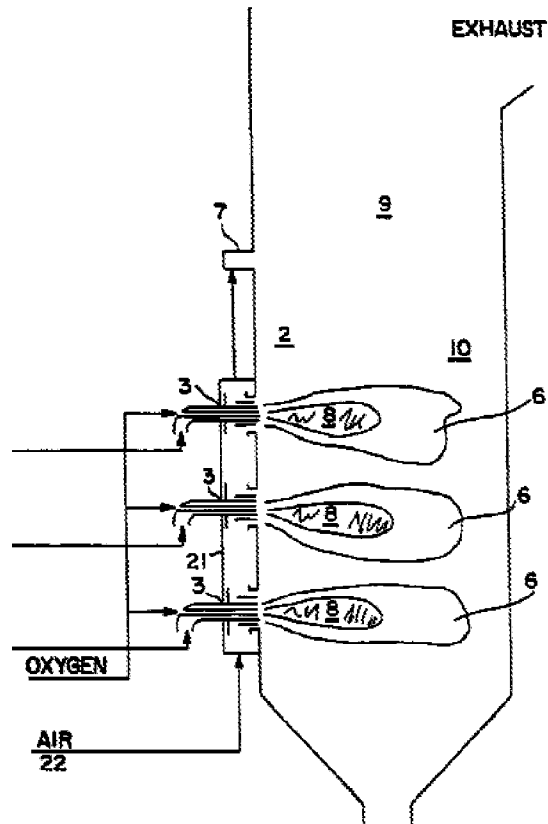


FIG. 1

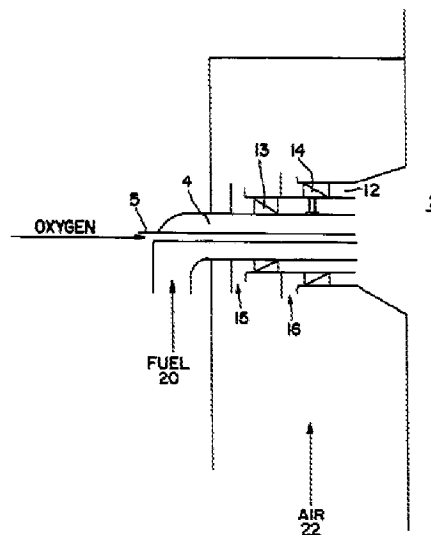


FIG. 2

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims Rejected under 35 U.S.C. 103(a)

Claims 13-16, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **US 6699029 (Kobayashi et al)**.

US 6699029 (Kobayashi et al) shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

US 6699029 (Kobayashi et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- the claimed velocity of the fuel and oxidant(s), the concentration of the various oxidants and the relative spacing of the burner components.

In regard to claims 13-16, 20 and 21, since the velocity of the fuel and oxidant(s), the concentration of the various oxidants, the relative spacing of the for a given burner and/or furnace would necessarily depend on numerous interrelated design concerns such as, the overall size and shape of the burner and/or furnace, the type of fuel combusted, etc., to operate the **US 6699029 (Kobayashi et al)** burner in the manner claimed can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

Claims Rejected under 35 U.S.C. 103(a)

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **US 2004/0157178 (Dugue et al)** in view of **US 6699029 (Kobayashi et al)**.

US 2004/0157178 (Dugue et al) shows (figure 3a) and discloses a method of combustion in a furnace including primary jet of oxidizer (31), a second jet of oxidizer (38) and a tertiary jet of oxidizer (30) located at a distance from the jet of fuel.

US 2004/0157178 (Dugue et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- a primary jet of oxidizer divided into a first primary central oxidizer jet which is central to fuel jet (40), and a second primary sheathing primary jet .

US 6699029 (Kobayashi et al) shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

In regard to claims 1-21, for the purpose of providing an alternative desired flame characteristic, it would have been obvious to a person having ordinary skill in the art to modify the **US 2004/0157178 (Dugue et al)** primary oxidant and fuel to be arranged as a primary jet of oxidizer divided into a first primary central oxidizer jet which is central to fuel jet (40), and a second primary sheathing primary jet, in view of the teaching of **US 6699029 (Kobayashi et al)**. In regard to claims 13- 21, since the velocity of the fuel and oxidant(s), the concentration of the various oxidants, the relative spacing of the for a given burner and/or furnace would necessarily depend on numerous interrelated design concerns such as, the overall size and shape of the burner and/or furnace, the type of fuel combusted, etc., to operate the **US 2004/0157178 (Dugue et al)** burner in the manner claimed can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-49 of U.S. Patent No. **US 6910879 (Dugue et al)** in view of **US 6422041 (Simpson et al)** or **US 6699029 (Kobayashi et al)**.

Applicant's claims	US 6910879 (Dugue et al)	Claim Comparison Notes
1. Claim 12 2. A method of fuel combustion, 3. in which a jet of fuel and	0. Claim 1. 1. A method of combustion in a furnace comprising the steps of: 2. injecting at least one fuel and	

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<p>4. <i>at least two jets of oxidizer are injected</i>, the first jet of oxidizer, called</p> <p>5. the primary jet, being injected so as to be in contact with the jet of fuel and to generate a first <i>incomplete combustion</i>, the gases originating from this first combustion still comprising at least a portion of the fuel, and</p> <p>6. the second jet of oxidizer being injected at <i>a distance</i> from the jet of fuel</p> <p>7. in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion,</p> <p>8. wherein the primary jet of oxidizer is <i>divided into two primary jets</i>:</p> <p>9. a first primary jet of oxidizer, called a central primary jet, injected in the center of the jet of fuel; and</p> <p>10. b) a second primary jet of oxidizer, called a sheathing primary jet,</p>	<p>3. at least one oxidizer separately, wherein said oxidizer comprises</p> <p>4. a primary oxidizer stream and</p> <p>5. a secondary oxidizer stream,</p> <p>6. wherein said primary oxidizer stream is further divided into <i>at least two portions</i>, wherein</p> <p>7. the first is a rapid-mixing stream and</p> <p>8. the second is a slow-mixing stream;</p>	<p>(with regard to “<i>incomplete combustion</i>” of a primary jet with a jet of fuel, see this table column 2, line 10 (US 6910879 (Dugue et al))</p> <p>(with regard to “<i>a distance</i>” from the jet of fuel, see this table column 2, line 11 (US 6910879 (Dugue et al))</p>
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<p>11. injected coaxially around the jet of fuel.</p>	<p>9. ii) injecting the first rapid-mixing stream <i>close to the fuel</i> whereby generating a first <i>incomplete combustion</i> rapidly;</p> <p>10. iii) injecting the second slow-mixing stream at <i>a distance d₁</i> from said first rapid-mixing stream, whereby the mixing of fuel and oxidizer occurs less rapidly than that of the first incomplete combustion; and</p> <p>11. iv) injecting said secondary oxidizer stream downstream from said primary oxidizer stream whereby entering into combustion with the portion of fuel that is diluted by the unreactive gases from the first incomplete combustion.</p>	
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US 6910879 (Dugue et al) shows (figure 3a) and discloses a method of combustion in a furnace including primary jet of oxidizer (31), a second jet of oxidizer (38) and a tertiary jet of oxidizer (30) located at a distance from the jet of fuel.

US 6910879 (Dugue et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

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- primary jet of oxidizer divided into a first primary central oxidizer jet which is central to fuel jet (40), and a second primary sheathing primary jet .

US 6422041 (Simpson et al) shows (figure 5) and discloses a method of combustion in a glass furnace including primary jet of oxidizer divided into a first primary central oxidizer jet (42) which is central to fuel jet (40), and a second primary sheathing primary jet (42). **US 6422041 (Simpson et al)** also shows and discloses a second jet of oxidizer (42, 60) located at a distance from the jet of fuel. See the annotated figure 5 of **US 6422041 (Simpson et al)** herein above).

US 6699029 (Kobayashi et al) shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

In regard to claims 1-21, for the purpose of providing an alternative desired flame characteristic, it would have been obvious to a person having ordinary skill in the art to modify the **US 6910879 (Dugue et al)** primary oxidant and fuel to be arranged as a primary jet of oxidizer divided into a first primary central oxidizer jet which is central to fuel jet (40), and a second primary sheathing primary jet, in view of the teaching of **US 6422041 (Simpson et al)** or **US 6699029 (Kobayashi et al)**. In regard to claims 13- 21, since the velocity of the fuel and oxidant(s), the concentration of the various oxidants, the relative spacing of the burner and/or furnace would necessarily depend on numerous interrelated design concerns such as, the overall size and shape of the burner and/or furnace, the type of fuel combusted, etc., to operate the **US 6910879 (Dugue et al)** burner in the manner claimed can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

Conclusion

See the attached USPTO for, 892 for prior art made of record and not relied upon which is considered pertinent to applicant's disclosure.

USPTO CUSTOMER CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carl D. Price whose telephone number is (571) 272-4880. The examiner can normally be reached on Monday through Friday between 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carl D. Price/

Primary Examiner, Art Unit 3749